



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/764,711	01/18/2001	Ivo Raaijmakers	ASMEX.186DV1	7574

20995 7590 02/24/2003

KNOBBE MARTENS OLSON & BEAR LLP  
2040 MAIN STREET  
FOURTEENTH FLOOR  
IRVINE, CA 92614

EXAMINER

ROMAN, ANGEL

ART UNIT PAPER NUMBER

2812

DATE MAILED: 02/24/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/764,711

Applicant(s)

RAAIJMAKERS ET AL.

Examiner

Angel Roman

Art Unit

2812

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 05 December 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 33-37 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 33-37 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 January 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 12.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 33-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vo U.S. Patent 5,097,381A in view of Mazuré et al. U. S. Patent 5,677,219.

Vo discloses an integrated capacitor formed in a trench having a width of no more than about 0.25 micrometers, a depth of greater than about 7 micrometers and an aspect ratio greater than about 20:1 (see column 5, lines 35-45), comprising; a dielectric layer 54 lining the trench; and a conductively doped polysilicon layer 52 (see column 5, lines 20-30) filling the trench. The trench is formed in a semiconductor substrate 40 (see Abstract). Vo also discloses filling the trench with heavily doped polysilicon functioning as a conductor cell node (see column 5, lines 21-29)

Vo is applied as above but lacks anticipation on specifying that the conductively doped polysilicon layer is doped in situ (as deposited); and disclosing arsenic as an impurity comprised in the doped polysilicon; Mazuré et al. discloses an as deposited doping process for forming a polysilicon plug doped with arsenic for a trench capacitor. In view of this disclosure it would have been obvious to a person having ordinary skills in the art at the time the invention was made to disclosed an in situ doping process and arsenic as an impurity comprised in the doped polysilicon as disclosed in Mazuré et al. in the primary reference of Vo since Vo is already suggesting filling the trench with heavily doped polysilicon and because arsenic is a conventional impurity used to form N-type doped polysilicon in trench capacitor fabrication processes. Furthermore forming the conductively doped polysilicon as deposited in the primary reference of Vo would have been obvious to one having ordinary skills in the art at the time the invention was made by performing routine experimentation since doping polysilicon as deposited is an obvious alternate to forming an undoped polysilicon layer and implanting afterwards to doped the layer.

***Response to Arguments***

4. Applicant's arguments filed 12/05/02 have been fully considered but they are not persuasive. With respect to Applicant's argument that the Examiner's rejections are based upon the Examiners blanket refusal to give patentable weight to structural limitations that may also implicate a process, the Examiner acknowledges the structural limitations of forming the doped polysilicon layer as deposited by combining the teachings in Vo with the teachings in Mazuré et al. since Vo does not clearly specify by itself forming the doped polysilicon using an in situ doping (as deposited) process to form the doped polysilicon nor forming an undoped polysilicon layer and implanting afterwards to dope the polysilicon layer. However, Vo clearly specifies filling the trench with heavily doped polysilicon, therefore in order to fill a trench with heavily doped polysilicon as suggested by Vo a person having ordinary skills in the art at the time the invention was made would have performed an in situ (as deposited) doping process in the primary reference of Vo by performing routine experimentation based on a desire for accuracy and manufacturing costs. Therefore as explained above the structure claimed by the Applicants is obtained by combining the teachings of Vo with the teachings of Mazuré et al. or it may also have been obvious to obtain by a person having ordinary skills in the art by performing routine experimentation applying the teachings of Vo.

Art Unit: 2812

***Telephonic Interview***


5. Applicants requested a telephonic interview with the Examiner, a telephone call was made by the Examiner to Adeel S. Akhtar on 02/20/03 to schedule the interview but the Applicants were not available.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Angel Roman whose telephone number is (703) 306-0207. The examiner can normally be reached on Monday-Friday 8:30am-6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Niebling can be reached on (703) 308-3325. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7724 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

AR  
February 20, 2003

  
John F. Niebling  
Supervisory Patent Examiner  
Technology Center 2800